



Project Delivery Network
Utility Design QC Checklist

Version
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Introduction

The Project Delivery Network Design Leader QC Checklist is to be used with the UDOT QC/QA Procedure. This checklist is a tool to assist the project team in verifying all work is produced with due diligence, using acceptable industry standard techniques, available resources and data, and reasonable decisions by competent professionals. The checklist is a tool for the delivery of quality documents and cannot replace the sound judgment and experience of competent professionals. It is the Design Team's responsibility to verify the quality of project documents **before** distribution.

Checklist Instructions

For each deliverable listed, the QC Checker is to verify all items listed in the checklist are complete, along with any additional items the QC Checker deems necessary. The checklist items are not to be interpreted as the only items that need to be verified.

Once all items are verified, the QC Checker is to sign the associated cover sheet and upload it onto ProjectWise. The QC is not complete until the cover sheet is signed, dated, and uploaded onto ProjectWise. See the Project Delivery Network QC/QA Procedure for the appropriate cover sheet.

QC reviews are to be completed **before** distribution.

The following explanations are to aid in completing the QC checklist items:

- A checklist item deemed "complete", "correct", or "accurate" does not denote that the item is perfect, but rather that the item satisfies design criteria based on known information, acceptable techniques, and sound judgment."
- A checklist item deemed "addressed" denotes the item as "reviewed all known concerns and verified the concerns are appropriately mitigated and satisfy design criteria." Addressed concerns are not necessarily incorporated into the design, but satisfactorily mitigated.
- A checklist item deemed "identified" denotes the item as "an acceptable and economical approach to satisfy design criteria based on known information."
- A checklist item deemed "verified" denotes the item as "verified the approach/conclusion as acceptable based on known information."
- Use checklist boxes to verify checklist items are complete. If a checklist item is *not applicable* to the current project, place an NA over the check box to denote the item as not applicable. This will allow the quality assurance to verify all items were addressed.
- Use the comment sections of the Cover Sheets to address exceptions, assumptions, and unique aspects of the project. The comments will help others understand why certain decisions were made and their impacts on the project.

2U1 Utility and Railroad Identification

Begin this activity as soon as possible. Early utility and railroad identification and coordination are critical to the success of the project. Identify all utility and railroad companies and complete an accurate depiction of existing utility facilities within the project limits.

References

1. [Roadway Design Manual of Instruction](#)
2. [Manual for the Accommodation of Utilities and the Control and Protection of State Highway Rights of Way](#)
3. [UDOT CADD Standards](#)
4. [UDOT Project Delivery Network](#)
5. [UDOT QC/OA Procedures](#)
6. [UDOT Practical Design Guide](#)

Utility and Railroad Companies Contact List

1. ☐ All utility and railroad companies with facilities in the project limits were contacted.
2. ☐ All utility and railroad company contact information was gathered and organized in a clear and concise manner.

Subsurface Utility Engineering (SUE) Level B, C, and D

1. ☐ All known utility companies within project limits were contacted for records and plans.
2. ☐ All utility records and plans are accurately incorporated into the utility file.
3. ☐ Survey team collected all necessary data to complete the file.
4. ☐ If the project scope and utility impacts warrant, the SUE quality level B utility locating was performed using geophysical techniques and surveyed to project control.
5. ☐ The file complies with UDOT CADD Standards
 - a. ☐ The file is in the project coordinate system.
6. ☐ The SUE level B, C, and D file is complete.

3U1 Identify Potential Utility Conflicts

Identify potential utility conflicts through coordination with utility owners and designers. Obtain preliminary relocation costs from utility owners.

References

1. [Roadway Design Manual of Instruction](#)
 2. [Manual for the Accommodation of Utilities and the Control and Protection of State Highway Rights of Way](#)
 3. [UDOT CADD Standards](#)
 4. [UDOT Project Delivery Network](#)
 5. [UDOT QC/QA Procedures](#)
 6. [UDOT Practical Design Guide](#)
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Preliminary Utility Conflict Matrix/Summary

1. ☐ Coordinated with the roadway, structures, drainage, irrigation, signal, lighting, and ATMS designers to discuss all potential conflicts.
2. ☐ The matrix/summary is organized in a clear and concise manner.
3. ☐ The matrix/summary is complete.

3U2 Initial Design Utility Coordination

Conduct a utility design meeting to facilitate relocation solutions. Facilitate the development of utility owner relocation plans.

References

1. [Roadway Design Manual of Instruction](#)
 2. [Manual for the Accommodation of Utilities and the Control and Protection of State Highway Rights of Way](#)
 3. [UDOT CADD Standards](#)
 4. [UDOT Project Delivery Network](#)
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Revised Utility Conflict Summary/Matrix

1. ☐ All potential conflicts have been reevaluated based on discussions with the utility owners.
 2. ☐ Coordinated potential design revisions to avoid utility conflicts with applicable discipline.
 3. ☐ The matrix/summary is organized in a clear and concise manner.
 4. ☐ All conflicts needing vertical verification are identified.
 5. ☐ The cost estimate for SUE level A verification is complete and appears accurate.
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Utility Agreements

1. ☐ All necessary agreements have been prepared for all utility companies requiring an individual utility agreement.
2. ☐ The agreements are in the proper format.
3. ☐ All descriptions, project identifiers, headers, and footers are correct.

3U4 Complete Utility and Railroad Designs

Complete utility relocation designs for all utility relocations for which UDOT is responsible. Develop preliminary utility relocation plan sheets and cost estimate. Develop at grade railroad crossing plans and verify surveillance report and railroad company guidelines compliance. (For grade separation crossings, see Structures activities)

References

1. [Roadway Design Manual of Instruction](#)
2. [Manual for the Accommodation of Utilities and the Control and Protection of State Highway Rights of Way](#)
3. Utility Owner Standard and Specifications
4. Railroad Company Standards and Specifications
5. [UDOT CADD Standards](#)
6. [UDOT Plan Sheet Development Standards](#)
7. [UDOT Standard and Supplemental Drawings](#)
8. [UDOT Project Delivery Network](#)
9. [UDOT QC/OA Procedures](#)
10. [UDOT Practical Design Guide](#)
11. [Estimate Review Checklist](#)

Preliminary Utility Relocation Plan Sheets

1. ☐ The design conforms to UDOT CADD Standards.
2. ☐ The design conforms to UDOT and utility owner standards.
3. ☐ Approval for non-standard design elements was obtained.
4. ☐ The proposed utility relocations were coordinated with all other proposed designs.
5. ☐ All relocation designs conform to UDOT and industry standards.
6. ☐ All preliminary plan sheets conform to UDOT Plan Sheet Development Standards.
 - a. ☐ All sheets are cut appropriately.
 - b. ☐ All reference files are properly attached.
 - c. ☐ UDOT CADD Standards are followed and maintained on each sheet.
 - d. ☐ All labels, notes, callout, etc. required for a review of the design are included and correct.

At-Grade Railroad Crossing Surface and Warning Device Plans

1. ☐ The diagnostic/surveillance team recommendations are incorporated into the railroad crossing design.
2. ☐ The at-grade crossing design conforms to current UDOT CADD Standards.
3. ☐ The at-grade crossing design conforms to current UDOT, Railroad, and industry standards.

3U4 Continued

4. ☐ Cut/fill lines are shown correctly.
5. ☐ The following design elements are adequately addressed.
 - a. ☐ Warning device design
 - b. ☐ Grading
 - c. ☐ Paving section
 - d. ☐ Lane transitions
 - e. ☐ Cut/fill lines
 - f. ☐ Additional ROW impacts
 - g. ☐ Additional utility impacts
 - h. ☐ Maintenance access
 - i. ☐ Fences
 - j. ☐ Pedestrian access
 - k. ☐ Raised islands
 - l. ☐ Removals
 - m. ☐ Trails
 - n. ☐ Preliminary signing
6. ☐ Adequate sight distance is provided.
7. ☐ Adequate protection is provided for devices in the clear zone.
8. ☐ The railroad ROW needs are correctly identified.

Utility Relocation/At-Grade Railroad Crossing Cost Estimate

1. ☐ The utility relocation/at-grade railroad crossing cost estimate was verified using the Estimate Review Checklist (found at the end of this document).

4U1 Prepare and Obtain Utility and Railroad Agreements and Permits

Finalize Individual Utility Agreements, Cooperative Agreements, Construction and Maintenance Agreement, and Permits required for project advertisement and construction.

References

1. [Roadway Design Manual of Instruction](#)
 2. [UDOT Betterment Agreement Website](#)
 3. [Manual for the Accommodation of Utilities and the Control and Protection of State Highway Rights of Way](#)
 4. [UDOT Project Delivery Network](#)
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Executed Individual Utility Agreements

1. ☐ Agreements have been prepared for all utility companies requiring reimbursement for relocation efforts.
 2. ☐ The utility company's cost estimate was reviewed and the final cost estimate is agreed upon.
 3. ☐ The cost estimate and plans are included with each agreement.
 4. ☐ The agreements are in the proper format.
 5. ☐ All descriptions, project identifiers, headers, and footers are correct.
 6. ☐ All signed and executed agreements are uploaded onto ProjectWise.
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Executed Cooperative Agreements with Municipalities and Service Districts

1. ☐ All agreements are in proper UDOT format.
 2. ☐ All descriptions, project identifiers, headers, and footers are correct.
 3. ☐ All signed and executed agreements are uploaded onto ProjectWise.
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Executed Construction and Maintenance Agreements

1. ☐ The railroad company's cost estimate was reviewed and the final cost estimate is agreed upon.
 2. ☐ The cost estimate and plans are included with the agreement.
 3. ☐ The agreement is in the proper format.
 4. ☐ All descriptions, project identifiers, headers, and footers are correct.
 5. ☐ The signed and executed agreement is uploaded onto ProjectWise.
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Wireline, Pipeline, and Encroachment Permits

1. ☐ All necessary permits have been submitted to the railroad company.

4U3 Complete Utility and Railroad Plans and Documents

Complete utility plans and documents. Obtain the UDOT Chief Railroad Engineer's and Railroad Company(s)' approval for the crossing modification or construction plans. Finalize railroad crossing plan sheets and develop all railroad project documents, including Railroad Company required special provisions. Obtain executed construction and maintenance agreements from the Railroad Company(s).

References

1. [Roadway Design Manual of Instruction](#)
 2. [UDOT CADD Standards](#)
 3. [UDOT Plan Sheet Development Standards](#) (PSDS)
 4. [UDOT Standard and Supplemental Drawings](#)
 5. [UDOT Standard and Supplemental Specifications](#)
 6. [Specification Writer's Guide](#)
 7. [Measurement and Payment Template](#)
 8. [Acceptance and Documentation Guide](#)
 9. Project Development Business System
 10. [UDOT Project Delivery Network](#)
 11. [UDOT QC/QA Procedures](#)
 12. [UDOT Practical Design Guide](#)
 13. [Estimate Review Checklist](#)
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Utility Relocation Plan Sheets

1. ☐ All review comments are addressed and the comment resolutions sent to the Design Leader.
2. ☐ All design revisions follow UDOT and utility owner standards. (see 3U4)
 - a. ☐ The design conforms to UDOT CADD Standards.
 - b. ☐ The design conforms to UDOT Standards and Supplemental Drawings and necessary approval for non-standard design elements was obtained.
3. ☐ All plan sheets conform to UDOT Plan Sheet Development Standards.
 - a. ☐ PSDS General Plan Sheet Requirements are followed.
 - b. ☐ Call-out rules are followed.
 - c. ☐ All title blocks are complete and correct.
 - d. ☐ Plan sheet CADD standards are followed and maintained on each sheet.
4. ☐ **Detail sheets** are complete (See PSDS – Detail Sheet Requirements).
 - a. ☐ The PSDS DT Sheet Checklist items are complete.
 - b. ☐ All details are labeled and dimensioned completely and correct.
 - c. ☐ All necessary labels, callouts, identifiers, symbols, and notes are provided and correct.
5. ☐ **Summary sheets** are complete (See PSDS – Summary Sheet Requirements).

- a. ☐ The PSDS Summary Sheet Requirements are followed and complete.
- b. ☐ UDOT standard summary sheets are used.
- c. ☐ All pay items are included in the summary.
- d. ☐ All pay item names, alignment designations, stations, offsets, units, and quantities are correct.
- e. ☐ All summaries are exported from Excel to Microstation.
- f. ☐ All summary items and quantities are entered into PDBS.
- 6. ☐ **Utility plan sheets** are complete.
 - a. ☐ PSDS Topo & Utility Sheet Requirements are followed.
 - b. ☐ All bid items are called out correctly.
 - c. ☐ All necessary labels, callouts, identifiers, symbols, and notes are provided and correct.
- 7. ☐ **Utility relocation plan sheets** are complete
 - a. ☐ PSDS Utility Relocation Sheet Requirements are followed.
 - b. ☐ All bid items are called out correctly.
 - c. ☐ All necessary labels, callouts, identifiers, symbols, and notes are provided and correct.

At-Grade Railroad Plan Sheets

- 1. ☐ All review comments are addressed and the comment resolutions sent to all reviewers.
- 2. ☐ The plans conform to current UDOT, Railroad, and industry standards.
- 3. ☐ The design conforms to UDOT CADD Standards.
- 4. ☐ The design conforms to UDOT Standard and Supplemental Drawings and necessary approval for non-standard design elements was obtained.
- 5. ☐ The railroad ROW needs were coordinated with the ROW design team.
- 6. ☐ Adequate sight distance is provided.
- 7. ☐ All future utility locations are called out in the plan sheets.
- 8. ☐ All plan sheets conform to UDOT Plan Sheet Development Standards (PSDS).
 - a. ☐ PSDS General Plan Sheet Requirements are followed.
 - b. ☐ Call-out rules are followed.
 - c. ☐ All title blocks are complete and correct.
 - d. ☐ Plan sheet CADD standards are followed and maintained on each sheet.

9. ☐ Detail sheets are complete (see PSDS – Detail Sheet Requirements).
- a. ☐ The PSDS DT Sheet Checklist items are complete.
 - b. ☐ All details are labeled and dimensioned completely and correctly.
 - c. ☐ All necessary labels, callouts, identifiers, symbols, and notes are provided and correct.

Utility Relocation/At-Grade Crossing Project Documents

1. ☐ The Special Provisions are complete.
- a. ☐ All special provisions conform to the Specification Writers' Guide (verify using Chapter 11 Checklist).
 - b. ☐ A special provision has been created for each non-standard item.
 - c. ☐ All general and project specific special provision content is accurate, complete, and does not contain anything unnecessary.
2. ☐ The Measurement & Payment (M&P) is complete.
- a. ☐ All M&P items match pay items exactly.
 - b. ☐ For all non-standard pay items, a complete and correct M&P description of all effort and materials is included.
 - c. ☐ All units are correct.
3. ☐ The Acceptance & Documentation (A&D) is complete.
- a. ☐ All A&D items match pay items exactly.
 - b. ☐ For all non-standard pay items, a complete and correct A&D is included.

Utility Relocation/At-Grade Crossing Cost Estimate

1. ☐ The utility relocation/at-grade railroad crossing cost estimate was verified using the Estimate Review Checklist (found at the end of this document).

Estimate Review Checklist

Provide review checklist of all design cost estimates.

References

1. [Estimating – Roadway Design Manual of Instruction](#) (Section 7.19)
 2. [Estimator's Corner Website](#)
 3. [UDOT Project Delivery Network](#)
 4. Project Development Business System
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Estimate (applies to every stage for updating the estimate)

1. ☐ All necessary bid items are included.
2. ☐ All quantities and units are correct.
3. ☐ All standard bid items match UDOT standard bid items exactly.
4. ☐ Unit prices were estimated using UDOT approved methods. (PDBS, local contractors, etc.)
5. ☐ All unit price estimates are documented.
6. ☐ Unit prices reflect the following: (1)
 - a. ☐ Location
 - b. ☐ Time of year of advertisement
 - c. ☐ Complexity of construction
 - d. ☐ Quantity of item
 - e. ☐ Limitations of operation
 - f. ☐ Current bidding environment
 - g. ☐ Availability of materials
 - h. ☐ Familiarity of a process
 - i. ☐ Specialty equipment
 - j. ☐ Risk to contractor
 - k. ☐ Inflation
 - l. ☐ Construction schedule
7. ☐ Lump sum bid prices are used only when appropriate (i.e. unit pricing is too difficult).
8. ☐ All lump sum bid prices considered the following:
 - a. ☐ Contractor risk due to unknown quantity
 - b. ☐ Difficulty in making it a unit price pay item

Additional PS&E Estimate

9. ☐ All bid items, quantities, and units match the plan sheet callouts, summary sheets, and M&P exactly.